

*de Schweinitz (G. E.)*

A NOTE ON FLUORESCIN-COLORING AND THE  
ACTUAL CAUTERY IN CORNEAL ULCERS.

BY

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OPHTHALMIC SURGEON TO THE PHILADELPHIA AND CHILDREN'S HOSPITALS.

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BY G. E. DE SCHWEINITZ, M.D.,  
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AS is well known since the publications of Straub, Thomalla, and Fromm-Groenouw, a concentrated, two per cent. alkaline solution of fluorescin colors green any portion of the cornea deprived of its epithelium, while the healthy epithelium remains unaffected. At first this discovery seemed devoid of practical value, but it soon acquired diagnostic worth in detecting minute abrasions of the corneal surface, particularly when these were of traumatic origin. Perhaps its most important use has recently been suggested by Nieden (*Centralblatt für praktische Augenheilkunde*, May, 1891), in connection with its value as an aid to the actual cautery in the treatment of ulcers of the cornea. This earnest advocate of the galvano-cautery in ocular therapeutics has more than once lamented the lack of exact means for determining how extensive should be the application of the glowing point of the instrument. In his last communication upon this subject he pointed out that he was rarely obliged to resort a second or third time to the use of the cautery, but in the very first instance succeeded in applying the heated needle to the entire area of ulceration, in spite of the fact that he was without a method of outlining with absolute certainty the entire area which required destruction. This means is now at

hand in the form of fluorescin, because, by its use, the border between the sound and the diseased area can be demonstrated with exactness. More than this, the depth of the ulceration and any outlying areas of infiltration deprived of their covering of epithelium are indicated by the green coloration. In common with a number of observers, I have often made use of fluorescin for the purpose of staining deep and superficial ulcerations of the cornea, and of demonstrating the rate of progress in the healing of any corneal ulceration, and the presence of minute foreign bodies imbedded in the surface of this membrane. Quite recently, acting on the suggestion of Nieden, I have employed it in several cases of ulcer of the cornea, to which, afterward, the glowing point of a thermo-cautery was applied. Two cases will illustrate its value.

CASE I. (Philadelphia Hospital.)—An adult with chronic trachoma: on the left side, in the stage of cicatrization; on the right side, in the stage of ulceration of the follicles, with pannus. This eye, owing to exposure, took on a violent form of keratitis with dense pannus in the upper portion of the cornea, while in the lower half there appeared an irregularly crescent-shaped ulcer with sloping margins and outlying spots of infiltration. The entire cornea exhibited the well-known whitish infiltration so common in this disease. The manipulation was as follows: An application of a few drops of a two per cent. solution of fluorescin (Gruebler's fluorescin 2 per cent.; carbonate of soda 3.5 per cent.) was made to the affected eye. The entire crescent-shaped ulcer was colored a deep green, and, still more interesting, three of the more saturated whitish areas of infiltration situated in the general haze of the cornea acquired a similar color. This at once became the guide for the proper application of the actual cautery. The ulcer itself and the three superficial spots were cauterized, or, in other words, all those spots which had been stained green



were subjected to this treatment. It seems to me, in a case of this character, that the three smaller areas certainly would have been overlooked without the use of fluorescin, and their character of superficial ulceration undetected, owing to the obscuration produced by the general haze and development of vessels in the cornea.

CASE II. (Children's Hospital.)—A child of about five years of age, with an ordinary phlyctenular keratitis, in the course of which a phlyctenular ulcer appeared below the centre of the cornea. In this stage the child was admitted to the wards, and the following manipulation performed: A few whiffs of ether were given to quiet the little patient, and the point of the cautery applied to the somewhat irregular ulcer and its slightly infiltrated margins. The eye was now washed out with boric acid lotion and a few drops of the fluorescin solution applied. It then became manifest that all ulcerated spots had been destroyed with the single exception of a small portion of the upper and inner margin, slightly distant from the main body of the ulcer, which at once assumed a deep-green, characteristic color. A second light application of the cautery to this spot destroyed the previously untouched area.

Nieden calls attention in his communication to the very points which are illustrated in these two cases selected at random. He dwells particularly upon the fact that in serpentic ulcer of the cornea, beyond the well-known half-moon-shaped area of propagation, one or two small, sharply marked spots of infiltration are commonly present, but, owing to the diffuse opacity of the border-zone of the ulcer, not readily detectable, unless they are colored green by the instillation of fluorescin. Every surgeon must have seen a phlyctenule start at the border of the cornea, break down into an ulcer, push its way toward the centre with an advance guard of infiltration and a rear guard of densely injected vessels, and with a strong tendency to perforate, or at all events

to form a stubborn type of keratitis, which, on healing, leaves a disfiguring stripe of opacity. In such a case a drop or two of the fluorescin mixture will accurately outline the extent of the ulcerated infiltration and give exact information as to where the point of the cautery should be applied, but more than all, as to what extent the destruction of the tissues should be carried.



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